DEFENSE INFORMATION SYSTEMS AGENCY
D8 C4I MODELING, SIMULATION & ASSESSMENT
ARLINGTON, VIRGINIA
AND
JOINT INTEROPERABILITY TEST COMMAND
FORT HUACHUCA, ARIZONA

ELECTRONIC COMMERCE/ ELECTRONIC DATA INTERCHANGE VALUE ADDED NETWORK PROVIDER COMMUNICATIONS CONNECTIVITY TEST PLAN

19 MARCH 1997

ELECTRONIC COMMERCE/
ELECTRONIC DATA INTERCHANGE
VALUE ADDED NETWORK PROVIDER

COMMUNICATION
CONNECTIVITY
TEST PLAN

VERSION 1.0

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EXECUTIVE SUMMARY

Commercial Electronic Data Interchange (EDI) Value Added Network (VAN) Providers serve as the interface between Government Automated Information Systems and Industry Trading Partners for the purpose of exchanging American National Standards Institute Accredited Standards Committee X12 EDI Transaction Sets.

The Joint Interoperability Test Command (JITC) will conduct a connectivity test to determine a candidate VAN's ability to interconnect with the Defense Information Systems Agency (DISA) Electronic Commerce Processing Node (ECPN). Interconnection requirements are outlined in the DISA EDI VAN Application Package (VAP). The testing is conducted for the DISA Electronic Commerce/Electronic Data Interchange (EC/EDI) Operations Team (EDI OPS). Test priority for a VAN applicant will be established by DISA/EDI OPS.

JITC will analyze submitted documentation and perform dynamic verification of error-free transmission between the VAN and the ECPN. This testing will confirm proper use of either:

a. File Transfer Protocol (FTP) over Transmission Control Protocol/Internet Protocol (TCP/IP) using either Internet or direct connect communications path.

or

b. Simple Mail Transfer Protocol (SMTP) over TCP/IP using the Internet as the communication path.

The VAN's primary and alternate communications path and the remote backup VAN's communication path will be tested.

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SECTION I - INTRODUCTION

I-1 BACKGROUND

a. The Defense Information Systems Agency (DISA) Electronic Commerce/Electronic Data Interchange (EC/EDI) Operations Team tasked the Joint Interoperability Test Command (JITC) to test each Value Added Network's (VANs) ability to interface with the Electronic Commerce Infrastructure (ECI). This test will determine the VAN's ability to interconnect with the Government via the Department of Defense (DOD) Electronic Commerce Processing Nodes (ECPNs) according to requirements outlined in the DISA EDI VAN Application Package (VAP) [VAN License Agreement (VLA), Enclosure 4, EDI Operations.)

b. Figure 1 provides an overview of the ECI. Government Automated Information Systems (AISs), DOD and Federal Gateways, the DOD Electronic Commerce Processing Node's (ECPNs), and commercial EDI VAN's are used to connect to Government Users and Industry Trading Partners (TPs). This enables the exchange of American National Standards Institute (ANSI) Accredited Standards Committee (ASC) X12 Data Interchanges.

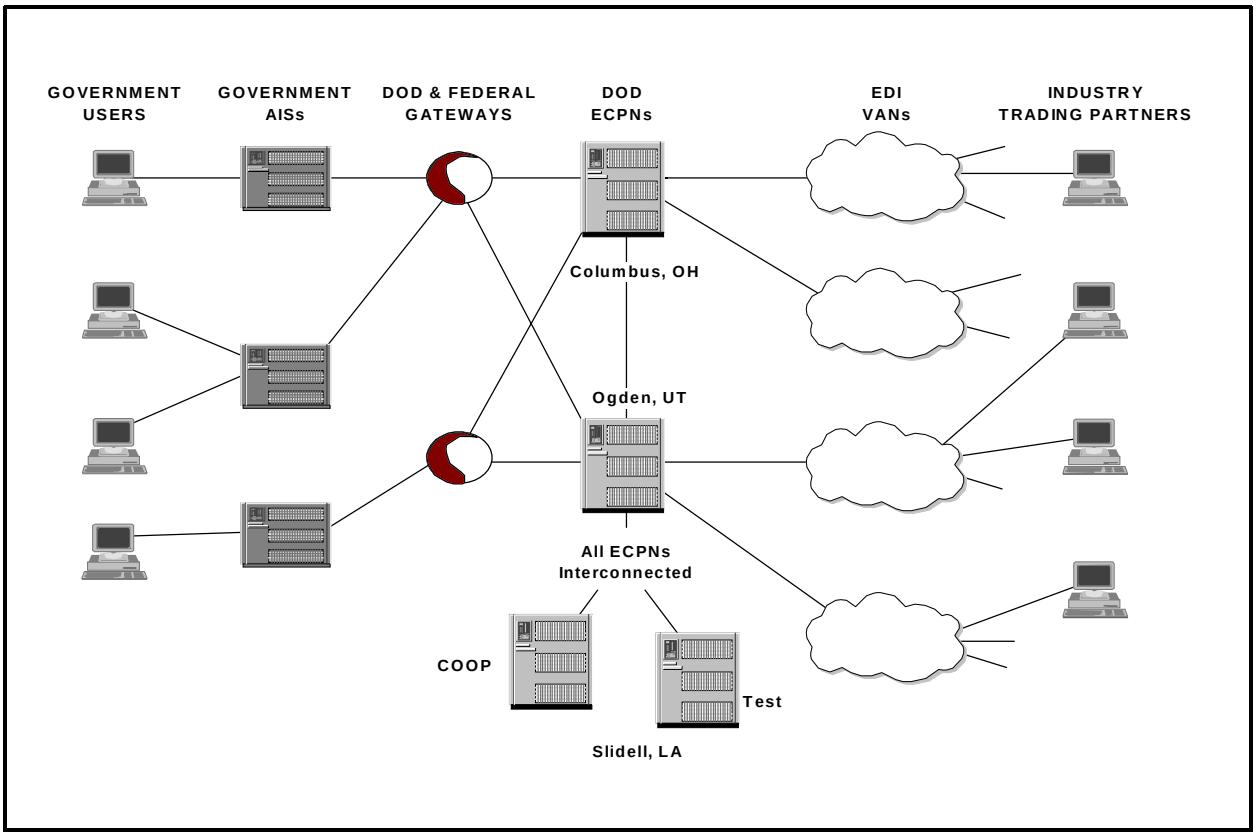

Figure 1. Electronic Commerce Components and Connectivity

I-2 PURPOSE. To determine the VAN's ability to support

a. File Transfer Protocol (FTP) over Transmission Control Protocol/Internet Protocol (TCP/IP) using either Internet or direct connect communications path. This will include FTP login usernames and passwords

or

b. Simple Mail Transfer Protocol (SMTP) over TCP/IP using the Internet as the communication path, including the optional service SMTP receipts.

I-3 SCOPE. JITC will review the completed Requirements List (RL) submitted by the applicant. This document will be used by JITC to prepare a connectivity test based on the applicant's implementation. Table 1 shows requirements stated in the VLA. JITC will verify that the VAN meets these requirements for the VAN's primary, alternate, and remote backup communication paths. The test ECPN is located at the DISA Continuity of Operations (COOP) and Test Facility (DCTF) at Slidell, LA. The VAN shall have four days to demonstrate proper VAN operation

Table 1. VLA Connectivity Test Requirements Summary

VLA Enclosure 4 Paragraph Number	DESCRIPTION
*	FTP User/Password
1.2.4.3.1	FTP Communications
1.2.4.3.2	SMTP Communications
*	SMTP Receipt (optional)
1.2.4.3.2	SMTP interchanges encoded in MIME (Deferred)
1.3.1.1	FTP Direct Connection (FTP/TCP/IP)

*JITC Derived Requirement

SECTION II - DETAILS OF TEST

II-1 CRITERIA. The following criteria apply to the VAN's primary and alternate communication paths and the remote backup VAN's communication paths to the ECPN.

a. FTP Username/Password. The VAN shall require the use of username and password identification prior to the FTP transfer of data. Anonymous logins are not allowed.

b. FTP Communications. The VAN shall successfully exchange at least 90% of FTP interchanges with the ECPN on the first transfer attempt without any FTP protocol errors.

c. SMTP Communications. The VAN shall successfully exchange 100% of SMTP interchanges with the ECPN on the first transfer attempt without any SMTP protocol errors.

d. SMTP Receipt. If the VAN supports delivery receipts it should provide a delivery receipt for each interchange when requested by the originator.

e. FTP Direct Connect Communications. The VAN shall exchange 100% of direct connect interchanges with the ECPN on the first transfer attempt without any FTP/TCP/IP protocol errors.

II-2 DATA REQUIREMENTS

a. Criteria-related Data

(1) FTP Username/Password

(a) VAN response to login attempts

(b) Login username and password

(c) VAN response to anonymous login

(2) FTP Communications

(a) Transmitted FTP interchange

(b) Received FTP interchange

(c) Number of FTP transfer attempts

(3) SMTP Communications

(a) Transmitted SMTP interchange

(b) Received SMTP interchange

(4) SMTP Receipt

(a) Transmitted SMTP receipt

(b) Received SMTP receipt

(5) Direct Connect Communications

(a) Transmitted FTP interchange

(b) Received FTP interchange

(c) Number of FTP transfer attempts

b. Supplemental Data. Data will be collected as the test proceeds on actions or lack of actions that would have an impact on the ability of the VAN to fulfill the required functions. Additionally, the following items will be collected.

(1) ECPN Communications Logs

(2) JITC Data Collection Worksheets

(3) Original electronic interchanges to be transferred

(4) Electronic copies of received interchanges/documents of all data transferred

(5) Completed Requirements List (RL)

(6) Tester's chronological log book

II-3 TEST PROCEDURES

a. Test Conduct

(1) JITC will configure the Test ECPN to service the VAN's primary and alternate communications path and the remote backup VAN's communication path, according to configuration information provided in the RL. This means two separate paths to the Internet, i.e. two Internet Service Providers. Both these paths must connect to the primary VAN's location. In addition, each applicant VAN must have a remote backup facility (separate location from the primary facility.) This location may be connected to the ECPN via a third path or it may use the existing primary or alternate path. (See Figure 2.)

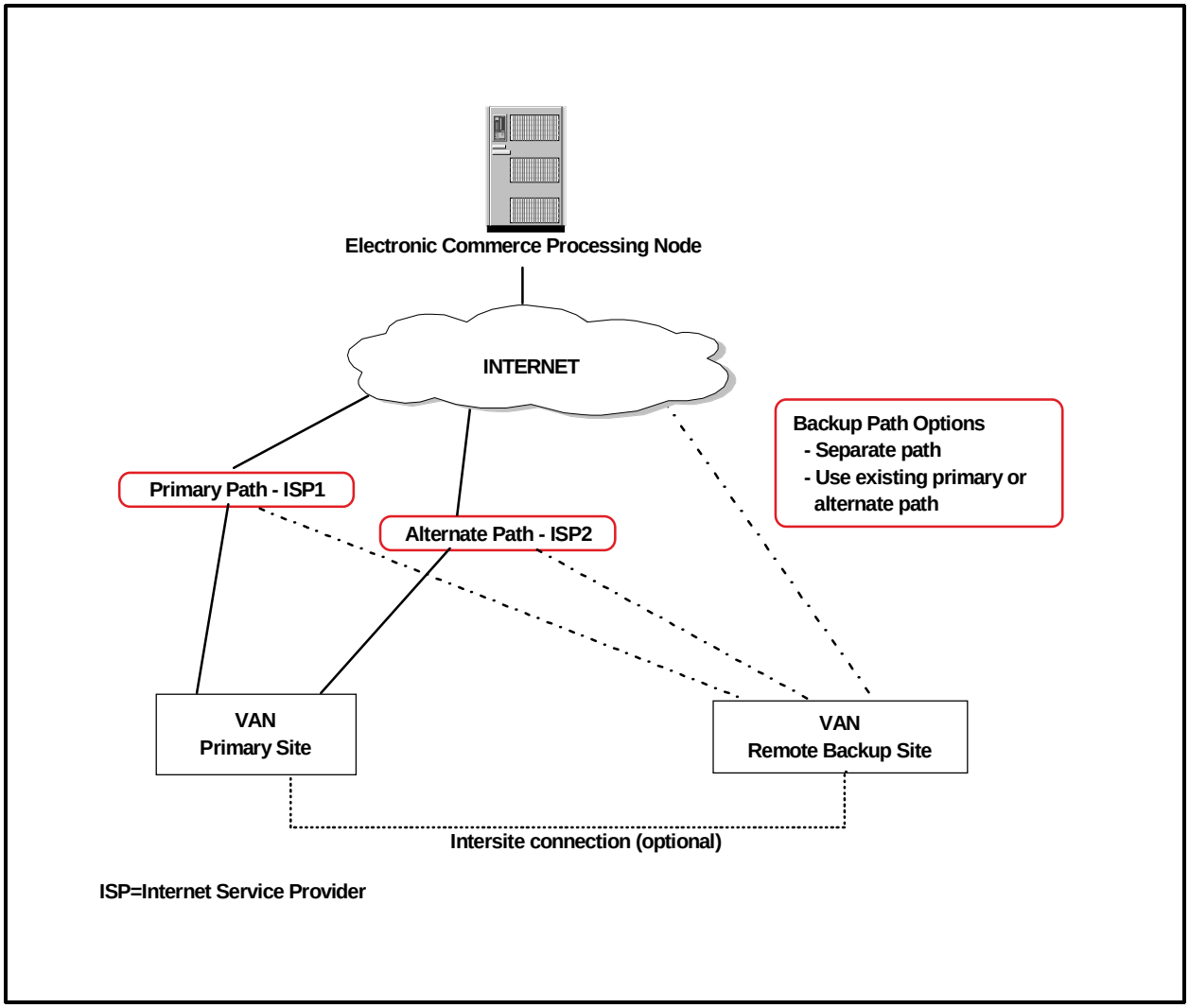

Figure 2. Generic VAN/ECPN Communications Connectivity Diagram

(2) The JITC will verify connectivity by a sequence of data transfers between the Test ECPN and VAN. The environment will be representative of ECPN operations. Figure 3 depicts the data transfers using the acceptable protocols. Each test segment (i.e. primary, alternate, and remote backup) will consist of 20 trials each 50 Kilobytes long. For each trial, the Test ECPN will send a test interchange (FTP or SMTP) to the VAN. Without alteration of the interchange content, the VAN will place the interchange for ECPN retrieval (FTP) or send the interchange (SMTP) to the ECPN. JITC will compare the original data sent to the copy received.

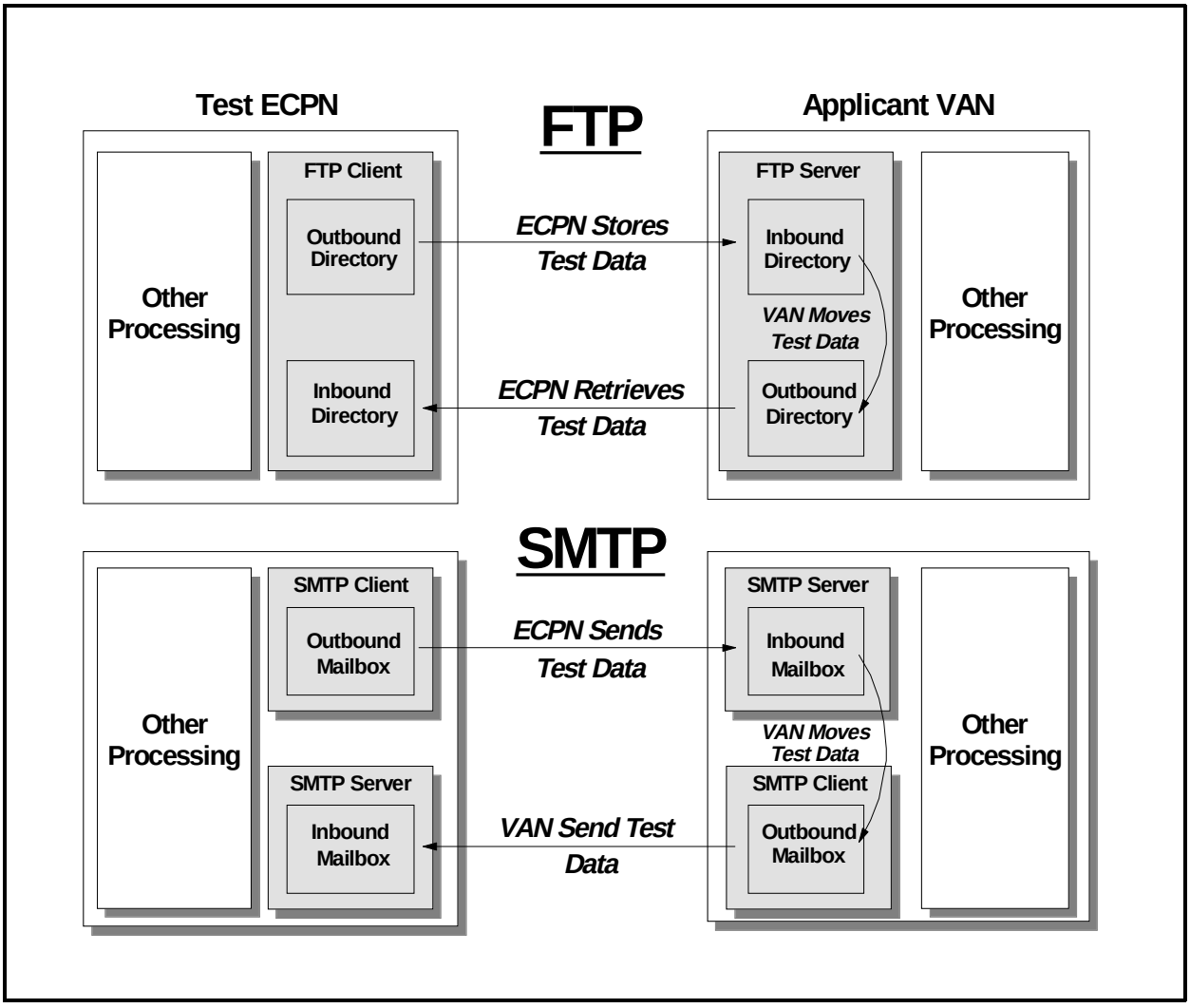

Figure 3. Test ECPN - VAN Test Data Flow

(3) JITC will inform the VAN POC via telephone that JITC is ready to begin executing test trials.

(4) The VAN POC will inform JITC via telephone that the VAN is ready to begin the test.

(5) JITC will attempt to login to the VAN via the primary communication path with random username and password (FTP only).

(6) JITC will attempt to login as anonymous.

(7) JITC will attempt to login to the VAN via the primary communication path with correct username and password (FTP only).

(8) JITC will submit a single 50 KB interchange to the ECPN for transfer over the VAN's primary communication path.

(9) The ECPN will transfer the interchange over the VAN's primary communication path.

(10) JITC will verify the receipt for each interchange sent over the VAN's primary communication path by the ECPN.

(11) If FTP, for each interchange received at the VAN, the VAN will place the interchange in the outbound directory for ECPN retrieval. If SMTP, for each interchange received at the VAN, the VAN will send the interchange to the ECPN.

(12) The ECPN will retrieve the interchange from the VAN (FTP only).

(13) Steps (8) through (12) will be repeated nineteen times.

(14) Steps (8) through (13) will be repeated for the VAN's alternate communication path

(15) Steps (5) through (13) will be executed for the remote back up VAN's site.

(16) For each interchange retrieved or each interchange received at the ECPN from the VAN, JITC will perform a comparison to the original data sent to the VAN.

(17) JITC will investigate and attempt to determine the cause of each interchange that is not returned to the ECPN by the VAN and interchanges with altered content. The primary data source for this will be the ECPN communications log.

b. Data Collection

(1) JITC will maintain a detailed, chronological, log identifying each significant test activity, the EDI test specialist performing the activity, and the time required to complete the activity. In the event testing is suspended, JITC will log the reason for the suspension and the date/time when it occurred.

(2) The data required to perform the analysis on the VAN under test will be collected during each test step. The notes collected by the tester during the test conduct will also be used during analysis. JITC will maintain electronic copies of all Test ECPN communications log files and test data interchanges (stored/sent and retrieved/received).

(3) All interchanges passed and all data reported, electronically or manually, will be maintained at the JITC EC/EDI Testing Facility for analysis. Once the VAN has been certified or permanently rejected, JITC will archive the data for a period of 12 months.

II-4 PRESENTATION OF RESULTS. The results will be presented in the Test Report in the form of tables of criteria as shown in Table 2 below.

Table 2. Connectivity Testing Results

REQUIREMENT	COMMUNICATIONS PATH			COMMENTS
	PRIMARY	ALTERNATE	REMOTE BACKUP	
FTP Username/Password Verified				
FTP Communications:				
Number of Transfer Attempts				
Number of Transfers with Errors				
Number of Transfers with out Errors				
SMTP Communications:				
Number of Transfers with Errors				
Number of Transfers with out Errors				

REQUIREMENT	COMMUNICATIONS PATH			COMMENTS
	PRIMARY	ALTERNATE	REMOTE BACKUP	
SMTP Receipt (Optional):				
Number of Transfers with Receipts				
Number of Transfers with out errors				
Direct Connection:				
Number of Transfer Attempts				
Number of Transfers with Errors				
Number of Transfers without Errors				

II-5 ANALYSIS AND DISCUSSION. For each communication path, results will be compared to the criteria. If the VAN is successful and meets all criteria, they will be notified via electronic mail and may continue to the next phase of the VAN Certification process. Any failures or anomalies will be discussed. Failure definitions are found in Appendix C. Test suspension results in continuation of testing at a later date. Failure or testing exit result in the VAN correcting problems in their application and reapplying for entry into the certification process.

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APPENDIX A

ACRONYMS

AIS	Automated Information System
ANSI	American National Standards Institute
ASC	American Standards Committee
COOP	Continuity of Operations
DCTF	Defense COOP and Testing Facility
DISA	Defense Information Systems Agency
DOD	Department Of Defense
EC/EDI	Electronic Commerce/Electronic Data Interchange
ECI	Electronic Commerce Infrastructure
ECPN	Electronic Commerce Processing Node
EDI	Electronic Data Interchange
EDI OPS	EC/EDI Operations Team - DISA Deputy Director for Operations
FTP	File Transfer Protocol
JITC	Joint Interoperability Test Command
Kb	Kilobytes (1024 bytes)
POC	Point of Contact
RL	Requirements List
SMTP	Simple Mail Transfer Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TP	Trading Partner
VAN	Value Added Network
VAP	VAN Application Package

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APPENDIX B

ADMINISTRATIVE INFORMATION

B-1 The candidate VAN must provide the information requested in the Requirements List (RL). This information is required for the site survey, connectivity testing, X12 standards compliance testing, and load testing. The RL, this test plan, the VAP, and a list of certified VANs can be found at the DISA web site http://edi.oti.disa.mil/certify/httoc.htm.

B-2 The test cases to be executed are based on the information provided in the RL, paragraphs 5 through 6.2.2, completed by the VAN prior to or as part of the VAN's site survey. The RL describes the VAN's technical implementation and test variables.

B-3 JITC will allow the VAN 24 hours of technical support, over a four-day period, to complete connectivity testing. If it becomes obvious that the VAN Provider will not be able to satisfy testing requirements in the scheduled time, JITC will terminate the test. Unless there are extenuating circumstances, the VAN will have to re-apply before testing can continue. JITC will make the determination for re-application based on observation and/or VAN Provider input. The 24 hours of technical support is for the complete connectivity test phase.

B-4. In the event testing is not progressing because of VAN anomalies, JITC will identify specifics to the VAN. If JITC and the VAN point of contact (POC) agree that the problem is not significant, i.e., can be potentially resolved in hours, the VAN may be allowed to troubleshoot the anomaly without exit. Any time expended by JITC to assist with the troubleshooting will be counted against the allotted 24 hours.

B-5. The VAN will not be allowed to change hardware or software configuration once connectivity testing begins. If a change is necessary, the testing exit will be executed. See Appendix C, paragraph C-6 below for details.

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APPENDIX C

FAILURE DEFINITION FOR VAN CONNECTIVITY TESTING

C-1 GENERAL. This failure definition is presented to ensure that all VANs tested by the JITC receive equitable treatment. It also provides information to the VAN Provider on the procedures followed when an anomaly occurs during testing.

C-2 SCOPE. These failure definitions apply to the JITC portions of the VAN Certification process - connectivity and load testing.

C-3 FAILURE CONDITION CATEGORIES. There are four categories of failures - three relate to the actual VAN implementation and one is administrative.

a. CRITICAL. The test cannot continue in the VAN's current condition. Basic connectivity between the VAN and Test ECPN protocol does not function.

b. MAJOR. The test cannot continue in the VAN's current configuration, but the resolution can be quickly implemented within 72 hours.

c. MINOR. The test can continue with a procedural change or the procedure needs to be reinitialized due to operator error or an outside error such as power failure.

d. ADMINISTRATIVE. The test cannot continue due to administrative reasons such as: lack of qualified personnel at VAN provider site. The test will be suspended for up to 72 hours. After the 72 hours has elapsed, the VAN will be disconnected from the ECPN and will be rescheduled for testing based on the test schedule at the time of disconnect.

Note: It is the VAN Provider's responsibility to ensure that the required support for testing will be on-hand during the scheduled test period.

C-4 FAILURE CRITERIA

a. CRITICAL - Shall require an exit from testing

(1) Any VAN function that prevents the ECPN from interconnecting with the VAN using FTP or SMTP.

(2) Non-compliance with protocol standards.

b. MAJOR - May result in test suspension

(1) Hardware failure that can be repaired within the 72-hour criteria.

(2) VAN not available to ECPN for processing data at the required times.

c. MINOR - May result in test suspension

(1) Improper actions by the VAN operator that results in a failure caused by procedure, not by hardware or software actions.

(2) A hardware failure that can be cleared within 30 minutes.

(3) Other outside causes such as power outages, acts of nature, etc.

(4) Failure to report all VAN or communication path problems to the JITC EDI specialist.

C-5 SUSPENSION. The VAN will be given a maximum of 72 consecutive hours to resolve the problem prior to being disconnected from the ECPN and having to be rescheduled for testing based on the test schedule at the time of disconnect. Included in that time will be up to 24 hours of consultation and test support with the JITC to aid in the resolution of the problem. If the problem cannot be resolved with the 72-hour window, the status changes to Critical and will proceed to the Testing Exit.

C-6 TESTING EXIT

a. During the connectivity test, a testing exit is a point in time when the JITC EDI test specialist and the VAN Provider decide together that test results up to that point do not justify continuing the assessment process. The request for a testing exit can be made by either party.

b. If a testing exit is taken as consequence of a dispute over the results of specific test cases, then the testing exit takes place before the assignment of verdict to the disputed test case.

c. If a testing exit is agreed to by both the JITC EDI test specialist and the VAN Provider, the JITC test specialist shall make available to the VAN Provider, on request, documentation containing all the information recorded during the assessment process.

d. In addition, the JITC EDI test specialist shall provide an informal test report which does not assume the status of the Test Report submitted at the end of test. It shall be considered simply as guidance to the VAN Provider on the results of the testing undertaken. This informal test report shall indicate the reasons why a testing exit was taken.

e. After a testing exit, testing shall not be restarted except by starting a new test process using the same documentation or by initiating a new assessment process if the documentation had to be changed as part of the fix.

Note: A suspension of testing as described in paragraph C-5 may be used prior to the testing exit, especially if the resolution of the problem appears to be an easy fix.

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